

AMENDMENTS TO THE SPECIFICATION:

Page 1, before line 1, insert the following heading:

TITLE OF THE INVENTION:

Page 1, before the paragraph beginning on line 2, insert the following heading:

BACKGROUND OF THE INVENTION

Please replace the paragraph beginning at page 1, line 2 with the following:

The invention pertains to a lock cylinder ~~of the type indicated in the introductory clause of Claim 1.~~ The lock cylinder consists of a cylinder housing and a cylinder core, rotatably supported in the housing. A key with a defined longitudinal key profile is assigned to the lock cylinder and can be inserted into the cylinder core to actuate it by rotation. A group of diametric shafts in the cylinder core are arranged in an axial row; the shafts hold plate-shaped tumblers, which can slide longitudinally

inside the shafts under the guidance of their longitudinal edges. The tumblers are spring-loaded in one of their two directions of movement and have control edges at defined heights, these edges being designed in conformity with the longitudinal profile of the key. In the resting position, that is, when the key is not present in the core, the tumblers engage in a locking channel in the cylinder housing. When the key is inserted and again when it pulled out, the tumblers can escape temporarily into an escape channel of the cylinder housing, which is diametrically opposite the locking channel.

Page 7, before the paragraph beginning on line 12, insert the following heading:

SUMMARY OF THE INVENTION

Please replace the paragraph beginning at page 7, line 12 with the following:

The invention is based on the task of developing a simple, low-cost lock cylinder ~~of the type indicated in the introductory clause of Claim 1~~ in which the tumblers can be easily installed and which has a reliable system of loss prevention but which is

also impossible to pick open because of the concealment of the position of the control edges. ~~This is accomplished according to the invention by the measures cited in Claim 1, to which the following special meaning attaches.~~

Page 9, before the paragraph beginning on line 7, insert the following heading:

BRIEF DESCRIPTION OF THE DRAWING:

Please replace the paragraph beginning at page 9, line 16 with the following:

-- Figures 1.1b-2.3b ~~[[1.1b-2.2b]]~~ show the same cross-sectional views of the same lock cylinder after the tumblers have been pushed down as far as possible into the escape channel.

Please replace the paragraph beginning at page 10, line 3 with the following:

-- Figures 4.1a-5.4a ~~[[4.1a-4.4a]]~~, in analogy to Figures 1.1a to 2.3a, show eight cross-sectional views through a second lock cylinder in its rest position in the area of eight tumblers,

some of the control edges of which are at different heights; and finally

Please replace the paragraph beginning at page 10, line 7 with the following:

-- Figures 4.1b-5.4b [[4.1b-5.4b]] show the corresponding cross-sectional views of second lock cylinder after, in analogy to Figures 1.1b to 2.3b, the tumblers have been pushed down as far as possible.

Page 10, before the paragraph beginning on line 10, insert the following heading:

DETAILED DESCRIPTION OF THE INVENTION:

Please replace the paragraph beginning at page 10, line 10 with the following:

The lock cylinder shown in Figures 1.1a-2.3a comprises a cylinder housing 10.3 with a bearing bore 11 for a cylinder core 20.3. The cylinder core 20.3 has a group of diametric shafts 23.3 ~~23.31~~, arranged in a row, one behind the other, in each of which

one of four different plate-shaped tumblers 31.3-34.4 is held. The longitudinal plate edges 30.1, 30.2, which are profiled in a particular way here as can be seen in Figure 2.2a, are guided along appropriate guide surfaces 21, 22 of the shaft 23.3, these guide surfaces being located on the inner, narrow sides of the shaft 31.3. Each of the shafts 23.3 is provided in the conventional manner with an expansion 24 as can be seen in Figure 2.3a, in which a compression spring 15.3 is located. One end of the compression spring 15.3 is supported against an end surface 25 of the expansion 24, whereas the opposite end grips a projection 35, which extends outward from the longitudinal plate edge 30.1 present there and into the expansion 24 of the shaft. As a result, the tumblers 31.3-34.3 are spring-loaded in the direction indicated by the force arrow 13.3.

Please replace the paragraph beginning at page 11, line 5 with the following:

The tumblers 31.3-34.3 have control edges 41.3-44.3 ~~41.1-44.3~~, which can be at four different heights with respect to the height center line of the associated tumbler 31.3-34.3. In Figure 1.1a, the control edge 41.3 is located at a first step height. The control edge 42.2 in Figure 1.3a is at a second step height,

whereas the control edge 43.3 in Figure 1.2a is at a third step height. Finally, the control edge 44.3 of Figure 2.1a is at a fourth step height. The control edges 41.3-44.4 ~~41.3-44.1~~ in the present exemplary embodiment are located on a tongue 69, which projects into a window 70 in the associated tumbler 31.3-34.3, as can be seen in Figures 2.1a. The edge of the tongue 69 which serves as the control edge 41.3-44.4 is that which faces in the direction of the spring-loading 13.3.

Please replace the paragraph beginning at page 12, line 8 with the following:

Without the special inventive measures to be cited further below, the tumblers 31.3-34.3, because of their spring-loading 13.3, would all travel the same distance into the locking channel 12 provided in the cylinder housing 10.3 according to Figure 1.2a when in the rest position, that is, after the key has been withdrawn. The insertion depth is determined by means familiar from the state of the art, such as by the contact of the spring-supporting projection 35.0 ~~35.3~~ against the expansion 24 of the shaft 23.3. In this case, however, it is possible to insert a feeler into the key channel up to the individual windows 70 of the tumblers 31.3-34.3, to detect the positions of the control edges 41.3-44.3, and to use this

knowledge to produce an unauthorized copy. This would put the security of the lock cylinder at risk.

Please replace the paragraph beginning at page 12, line 22 with the following:

Another possibility of a similar type of unauthorized detection process would be to insert a lock-picking tool into the windows 70 of the various tumblers 31.3-34.3 and to push the control edges 41.3-44.3 down so far in the direction of the arrows 77 of Figures 1.1b-2.3b that the terminal plate edge 39 of the tumblers in question meet the bottom surface 14 of the escape channel 16, shown in Figure 1.1b. there is also an opposing locking channel 12 that has a similar bottom surface 17 as shown in Figure 2.3a. The escape channel 16 is located in the cylinder housing 10.3 diametrically opposite the locking channel 12. The escape channel 16 normally serves to allow the tumblers 31.3-34.3 to move out of the way when the key is being inserted. With the picking tool, the extent of the setback movement 77 of the individual tumblers could be determined in this case, whereupon it would be possible to determine the height of the control edges 41.3-44.3 on the individual tumblers 31.3-34.3. This could be used to produce an unauthorized copy. All this is prevented according to the invention for the following reason.

Please replace the paragraph beginning at page 14, line 12 with the following:

Figures 1.1a-2.3b show the finished lock cylinder, ~~after~~ the tumblers 31.3-34.3 are ~~have been~~ introduced into the shafts 23.3 of the cylinder core 20.3 and ~~then~~ the comb 62.3 with its teeth as shown at the outer end 63.3 in Figure 1a, ~~36.3, 36.3'~~ has been pushed into a radial opening 61.3 in the cylinder core 20.3, but with an inner end 64.3, as seen in Figure 1.1a, engages in the shaft 23.3 of the cylinder core 20.3. A transverse plane 71.3 passing through the cylinder axis is shown in broken line in Figures 1.1a-2.3b. This plane is transverse to the direction in which the spring-loading 13.3 acts. Here is where the centers of the maximum points of the profiles are located. The inner flank pair 37.3i, 38.3i is symmetric with respect to the transverse plane 71.3 and has flanks which are essentially parallel to this transverse plane 71.3. The outer flank pair 37.3a, 38.3a is asymmetric to the transverse plane 71.3 and forms a certain angle to it. In addition, the outer flank 37.3a is shorter than the other flank 38.3a.

Please replace the paragraph beginning at page 15, line 19 with the following:

Cutouts 26.3 are located in the longitudinal plate edges 30.2 of the tumblers 31.3-34.3, that is, on the edges facing away from the projection 35. The cutouts 36.3 are of similar design. As can be seen on the basis of Figures 1.1b-2.3b, however, the various cutouts differ in their dimensions from each other as a function of the position of the associated control edge 41.3-44.3, and they also occupy different height positions. Common to all, however, is that the cutouts 26.3 are designed with two steps and that they have two different pairs of opposing flanks at different depths of the cutout. On the lower step of the cutout 26.3, as can be seen in Figure 1.1b, there is an inner pair 37.3i and 38.3i of opposing flanks on the interior facing surfaces. On the upper step, the interior surfaces of the cutout 26.3 have an outer pair of opposing flanks 27.3a and 28.3a. In the same way as explained for the teeth 36.3, 36.3', the inner opposing flanks 27.3i, 28.3i are again designed differently from the outer flanks 27.3a, 28.3a. The inner opposing flanks 27.3i, 28.3i are essentially parallel to the previously mentioned transverse plane 71.3 ~~21.3~~ of the cylinder core 20.3, whereas the outer flanks 37.3a, 38.3a are at a certain angle to that plane. In the present case, the two outer opposing flanks 37.3a, 38.3a are essentially mirror images of each other. These design measures lead to the following results.

Please replace the paragraph beginning at page 18, line 21 with the following:

As previously mentioned, a comb, the appearance of which can best be seen in Figure 3, is also used in the second exemplary embodiment. In this case, the corresponding reference numbers are used to designate analogous parts, with the difference that here most of the numbers ~~number~~ are followed by ".4". Only the differences need to be discussed. The preceding description applies to all else, while the cylinder core 20.4 also has a shaft 23.4, as shown in Figure 4.3a, and, as shown in Figure 1a, the closing is spring loaded by a pressure spring 15.4 in the direction of the force arrow 13.4.

Please replace the paragraph beginning at page 19, line 5 with the following:

As previously mentioned, Figure 3 shows a comb 62.4 whose continuous comb-back forms the outer end 63.4, while the comb ~~with teeth 36.4, 36.4', the~~ have inner ends 64.4 ~~of these teeth~~ having the same profile. The teeth 36.4, 36.4', however, are arranged here, too, in two different laterally reversed positions on the comb 62.4, namely, in an alternating sequence of normal

teeth 36.4 and reversed teeth 36.4'. When the teeth are inserted, the comb 62.4 is handled as a single unit. The associated radial openings 61.4 in the cylinder core 20.4 for the comb 62.4 and its teeth are of a uniform design, as can be seen in Figures 4.1a-5.1a.

Please replace the paragraph beginning at page 25, line 9 with the following:

15.3 compression spring (Figure 1.1a ~~4.1a~~)

Please replace the paragraph beginning at page 25, line 10 with the following:

15.4 compression spring (Figure 4.1a ~~7.1a~~)